

WHAT IS CLAIMED IS:

1. A load cup for transferring a substrate in a chemical mechanical polishing system, comprising:
 - a substrate support adapted to transfer a substrate with a polishing head along a central axis; and
 - at least a first actuator coupled to the substrate support and adapted to move the laterally to the central axis.
2. The load cup of claim 1, wherein the substrate support further comprises:
 - a peripheral lip extending from a first side of the substrate support and defining a substrate receiving pocket with the first side.
3. The load cup of claim 2, wherein the lip includes an inner diameter wall having at least a portion thereof disposed at an acute angle relative to the central axis.
4. The load cup of claim 1 further comprising:
 - a second actuator coupled to the substrate support and adapted to move the substrate support orthogonally to the first actuator.
5. The load cup of claim 1 further comprising:
 - at least a second actuator coupled to the substrate support and adapted to move the substrate support perpendicular to the central axis.
6. The load cup of claim 1, wherein the at least one actuator is adapted to move the substrate support in at least two directions perpendicular to an axis defined normal to the first side.
7. The load cup of claim 1 further comprising:
 - a second actuator coupled to the substrate support and adapted to move the substrate support within a plane defined perpendicular to the central axis;

and

a third actuator coupled to the substrate support and adapted to move the substrate support in the plane perpendicular to the central axis.

8. The load cup of claim 1 further comprising:
a sensor adapted to detect the position of the actuator.
9. The load cup of claim 1, wherein the first surface of the substrate support is adapted to retain a liquid bath thereon, the liquid bath adapted to support the substrate.
10. The load cup of claim 1 further comprising:
a plurality of pins projecting from the first side of the substrate support and adapted to center a substrate relative to a central axis of the substrate support.
11. A substrate support comprising:
a base;
an annular lip extending from a first side of the base to a distal end and defining a hollow cylinder; and
a plurality of locating pins circumscribing the lip and having an end adapted to move between elevations above and below the distal end of the lip.
12. The substrate support of claim 11, wherein the cylinder is substantially filled with a fluid adapted to float the substrate thereon.
13. The substrate support of claim 11, wherein the lip has a seal disposed the distal end.
14. A method for transferring a substrate from a load cup to a polishing head in a semiconductor polishing system, comprising:
loading a substrate on a fluid disposed in a load cup;
moving the fluid supporting the substrate toward a polishing head; and

transferring the substrate to the polishing head.

15. The method of claim 14, wherein the fluid beneath the substrate prevents the substrate from bowing during substrate transfer.

16. The method of claim 14 further comprising:

extending plurality of locating pins from the load cup to contact the polishing head and guiding the substrate circumscribed by the locating pins as the substrate is elevated.

17. The method of claim 14 further comprising:

sensing the relative position of the load cup and the polishing head; and
correcting the position of the load cup in response to the sensed position.

18. The method of claim 17 further comprising:

moving the load cup laterally to center the substrate below the polishing head.

19. A method for transferring a substrate between a polishing head and a load cup, comprising:

sensing a relative position of the polishing head relative to the load cup;
and

automatically aligning the load cup and polishing head in response to the sensed relative position.

20. The method of claim 19, wherein the step of aligning further comprises:

repositioning the load cup within a plane defined normal to a central axis of the load cup.

21. The method of claim 19, wherein the step of aligning further comprises:

repositioning the polishing head within a plane defined normal to a central axis of the load cup.

22. A method for transferring a substrate between a polishing head and a load cup, comprising:

- transferring a substrate to a load cup;
- centering the substrate;
- extending a plurality of alignment pins to concentrically retain the substrate within the load cup.

23. A method for transferring a substrate from a load cup to a polishing head in a semiconductor polishing system, comprising:

- supporting a substrate on a fluid layer disposed in a load cup; and
- transferring the substrate from the load cup to the polishing head.

24. The method of claim 23, wherein the step of transferring further comprises moving the fluid layer towards the polishing head.

25. The method of claim 23 wherein the step of transferring further comprises urging the substrate towards the polishing head relative to the load cup.

26. The method of claim 25 wherein the step of urging the substrate towards the load cup further comprises moving a seal in contact with a perimeter of the substrate.

27. The method of claim 27 further comprising:

- extending plurality of locating pins from the load cup to contact the polishing head and guiding the substrate circumscribed by the locating pins.

28. The method of claim 23 further comprising:

- sensing the relative position of the load cup and the polishing head; and
- correcting the position of the load cup in response to the sensed position.

29. A method for transferring a substrate from a polishing head to a load cup in a semiconductor polishing system, comprising:

moving a substrate retained in a polishing head over a load cup;
contacting the substrate retained in the polishing head with a fluid layer disposed in the load cup; and

moving the fluid layer while in contact with the substrate away from the polishing head to transfer the substrate from the polishing head to the load cup.

30. The method of claim 29, wherein the step of moving the fluid layer further comprises generating surface tension across the fluid layer between the load cup and substrate.

31. The method of claim 29 wherein the step of moving the fluid layer further comprises urging the substrate uniformly across a diameter of the substrate towards the load cup.

32. The method of claim 30 wherein the step of moving the fluid layer further comprises moving a seal in contact with a perimeter of the substrate away from the polishing head.

33. The method of claim 29 further comprising:
extending plurality of locating pins from the load cup to contact the polishing head and guiding the substrate circumscribed by the locating pins.

34. The method of claim 29 further comprising:
sensing the relative position of the load cup and the polishing head; and
correcting the position of the load cup in response to the sensed position.